Industrial FINISHING

Reg. U. S. Pat. Off.

Devoted to Product Finishing in the Factory

Vol. XI, No. 3 | JANUARY, 1935 | $2.00 a Year

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Published by

Practical Publications, Inc., 222 East Ohio St., Indianapolis, Indiana

Eastern Office: C. A. Larson, Mgr., 254 West 31st Street, New York City; Phone, Penna. 6-9049

Letters from Readers of "Industrial Finishing"

The names and addresses of firms or individuals whose letters and inquiries appear in this department may be had by writing this office, or letters addressed to them in care of this office will be forwarded promptly.—The Editor.

Burn-Proof Lacquer

Will you please give us the names of several firms that manufacture burn-proof lacquer for wood? We would also like to know the name of a firm that manufactures a paint or plastic that can be applied to wood to make it look like marble.—R. O. S. (Novelty Furniture).

Tough Lacquer to Sell

We note in the December issue (page 7) that N. N. Q. asks for a tough lacquer or water-proofing material that is flexible, that will stand up under heat and cold, and hot and cold water. We have been supplying a good many of the rubber manufacturing companies for some time with a material which we believe will meet the requirements. The one that we are supplying will also stand hot oil. Tell us the degrees of heat and cold and other details that you want to cover—what color you must have, etc.—and we shall be glad to submit samples to you for your tests and approval.—W. F. Q. Co.

A Machine to Finish Venetian Blind Slats

On page 4 of December issue, I notice an inquiry about the finishing of Venetian blind slats. These people were right here in my shop and saw the machine that does this work, but I found them very hard people to do business with and, of course, they are still hunting for something to finish Venetian slats and similar work; and I am led to believe from what I heard them say they want to get a machine that costs but very little. I can supply them with a machine for finishing slats, the same as the one that has been used for the last 15 years or more, finishing millions of feet of Venetian blind slats, and I have already sent them samples of work done on these patent finishing machines.—C. W. Smith.

Rubbing and Buffing Machines

Would you kindly furnish us with the name of a manufacturer of a practical rubbing machine suitable for use in refinishing furniture (repair work)? We are also interested in a portable-shaft buffing machine for use on furniture. We use lacquers exclusively, especially alcohol-resistant.—G. & I. Co. (Furniture).

Dipping Wood Handles

We would appreciate having the names of any concerns of which you may know who manufacture equipment for dipping wood handles in lacquer.—D. U. Co. (Tools).

Spray Men's Soap

We are desirous of getting in touch with some manufacturer who makes a product similar to that known as "Protek." In case you are not familiar with Protek, it is a substance that spray men apply to their hands before they start to spray, so their hands may be readily cleaned when they finish their work. We thought

HILO

LACQUERS & LACQUER ENAMELS

Modern finishing, more than ever before, makes two demands—durability of finish and simplicity of application.

Hilo Lacquers and Lacquer Enamels satisfy these demands in a variety of products for use on wood, metal, rubber, fibre, sized cloth, paper, etc. They may be obtained in brilliant colors, white, black or clear, and for application by spraying, hand or automatic dipping and coating machine.

The Hilo "Better-The-Finish" Laboratory is ready at all times to help you with your lacquer finishing problems. Your inquiries are invited.

Bulletin No. 11 may be had on request; it describes Hilo Lacquers and Lacquer Enamels and gives a number of suggested finishing systems.

There is a trained Hilo representative always ready to call and give you the benefit of our experience in the finishing field.

HILO VARNISH CORPORATION

"70 Years Experience"

HILO

42-60 Stewart Ave., Brooklyn, N. Y.

Chicago — Boston — Philadelphia

possibly you may have handled some advertising for a concern that manufactures a similar product, and if so I will appreciate it very much if you give us the name.—O. E. O. Mfg. Co.

Cheap Walnut Finish

We are figuring on a small item for the chain stores. This item is made of walnut and the buyer insists on a nice, smooth, glossy, natural, walnut finish. The finishing game, being entirely out of our line, we would appreciate any information you could give us. As this item is going to retail for ten cents you can readily see it will have to be done cheaply.—S. & N. Co. (High-Grade Millwork).

Finishing Wood Floors

Do you have any literature on finishing wood floors? Also, what grade and type of wood can be used to the best advantage? Any other data that you might give the writer along these lines will be appreciated.—C. H. Co. (Store Fixtures).

Tumble Finishing

I would like to get what information I can on the subject of finishing by the tumbling method. I expect to manufacture a certain product that will be made up quite largely from turnings which will be ¾-in. in diameter, which will be spread out a considerable distance one from the other. Hence I do not think that brushing or spraying would be very economical. It might be advisable to dip the parts, but I have been told that tumbling would save both material and labor. Please send me whatever records you may have available on this subject. Do you know of anybody that makes this equipment? If so, please send the names of the manufacturers.—B. B. W.

Bone White Finish

Your inquirer signed "A. O." in the November issue, page 30, was answered very well by Mr. Worth regarding a process for producing bone white finish. I like some of the new goods mentioned, but in my method of getting what I think would be about the same result, that is "old bone" or "bone white," I invariably begin with a good decoloriser, applying it on any of the woods mentioned in your article and also on South American Rosewood (which is one of the best veneer surfaces to produce a beautiful bone white finish, if bleached with the right material). This first treatment of the bare wood has been found to eliminate at least two operations and one coat formerly employed. The decoloriser has further advantages, for example, the prevention of "bleeding" into top finishes by some woods, such as mahogany. I will be glad to reply to inquiries sent to me in care of your paper.—D. M. (Superintendent of an interior decorating service).

Rust Protection

We have a patented chair . . . . which is being manufactured for us on a royalty basis and we manufacture all the hardware used in this chair. Some of these parts are flat hot-rolled bars 1½-in. wide by 1-in. thick; others are ¾-in. wide by ¼-in. thick. Some of these parts are made of Bessimer wire, which is quite similar to cold-rolled shafting, having a very smooth finish but a softer texture to permit bending.

We have been dipping these parts in black lacquer. It seems regardless of what type of material we use, we have trouble; it chips off badly. This hardware is all concealed, none of it being exposed after the chair is upholstered. We are wondering if you could recommend to us some process of treating it to prevent it from rusting; it is not necessary to have a body of paint if we can protect it from rusting.—G. D. Furn. Co.

Colored Bake Enamels

One of our products, used by dry cleaners, is wire coat hangers. In the past they have been japanned or made of galvanized wire. There seems to be a demand for colors in this line and for the past six months we have been working with a large local paint manufacturing concern with little success. Our oven is a modern type with temperature controls, made by Maehler of Chicago.

The information we are seeking is a concern that makes colored enamel which, when baked, is impervious to the usual cleaning solutions used by dry cleaners (naphtha, carbon tetrachloride, etc.), the proper solvent for such enamel, and the approximate cost of both enamel and solvent. The enamel must also be hard but not

(Continued on page 53)

Setting up a Department for Finishing

Metal Refrigerator Parts

by M. M. Miller

Within the last year the writer had occasion to set up a complete plant for the finishing of metal refrigerators. Some of the biggest problems that came up were in connection with the finishing department. In this article I explain how our present metal-cleaning and finishing department was tooled up to clean and finish metal parts for modern refrigerators on an economical production basis.

IN TOOLING UP a part of our production department for cleaning and finishing parts for metal refrigerators, we started off with the realization that the finish is one of the most important features in the construction of a refrigerator. From past experience we knew that no other single item could so effect our sales, give us endless field troubles, disrupt the morale of our selling organization and lose more business for us, than a finish that would not hold up as well as our customers expected it to. We also knew that to have the finish as good as we wanted it to be, would cost considerable money, and much thought would be required in the layout of our finishing department in order to keep our operating costs low and our quality high.

We have always been great believers in the common sense method of doing things without the benefit of anything complicated. We knew the type of finish we were going to use. We selected the best possible method of cleaning metal that we could afford to use. We also determined upon the methods of application and the progress of all parts in the finishing department; with this in mind, we started off on the basis of keeping all handling down to a minimum. We drew up plans and started laying out all equipment and planning the movement of the work. We early provided for sufficient storage space at the beginning of our operations, and space for excess accumulation between various operations, as we have found that the penalty of not providing for this is an uneven production flow that cannot result in the maximum savings. These

spaces for the temporary storage of essential surplus materials between operations allow other machines and men to continue work, even when a halt occurs in some dependent operation within the production line.

Metal Cleaning Operations

Our cleaning operations, in the order of their procedure, consist of:

1) An inspection table, where the parts are examined and all rust removed with a special rust remover, aided by steel wool. Alongside of this table we have placed a flexible-shaft grinder with a course sanding disc, to further aid in rust removal.

2) The work then proceeds through two wash tanks containing solvent mixtures. The first tank is for the removal of oil and grit which is present on the metal sheets. Alongside of this tank is a drainboard. From the drainboard the work proceeds to the second tank, which contains fairly clean solvent, and which completes the washing operations. It is then placed on the second drainboard.

3) The washing completed, the work then advances to a large latticed rack where it is scrubbed with acid. This acid serves to counteract the soluble alkaline salts of the metal itself, and also slightly etches the surface of the metal to make it more paint receptive. This acid is then wiped off and the metal surfaces are oven dried, after which they are tack-ragged to make them ready for priming.

Prime Coat Dipped

Our priming operations are all done in a dip tank. The tank is large enough to handle all of our work and to hold sufficient material for a full day's run. The drainboard is laid out plenty long so that sufficient time can be allowed the work for draining without hampering our production.

Spray Equipment

We were careful in the location of our spray booths, not only from a production economy standpoint but from the standpoint of fire protection, dust collection and proper ventilation. We gave particular care to the selection of the proper type of spray guns and nozzles. We selected pressure feed in preference to gravity feed for our paint spray tanks. We arranged to catch all spray dust in a large settling chamber, where it is collected in water and also on removable baffles. Other features entering into the selection of our spray booths were ease of cleaning, proper lighting and safety effects.

"Batch" Type Ovens

Our baking equipment, which we use to bake on every one of

the three coats used on our refrigerators, is of the batch type. We feel that with limited production, this type lends itself more to flexibility than does the continuous conveyor type. The greatest problem involved, however, is the problem of loading the oven trucks so as to get maximum capacity out of the oven and yet not impair the ventilation to an extent whereby uniform baking is not obtained, which often results in color variations and hardness failures. This took the most time, but we were well pleased with what we obtained.

We are able to load in our batch oven over four times the amount of work that could be accommodated in the same space in a conveyer type oven; and at the same time there is no danger of some work touching other work while being handled. This arrangement has been made possible by a series of clever hooks and parts separators, which we designed.

Between coats, all work is sanded. A separate space is set off as a sanding department. Men wearing rubber gloves unload the trucks and rack all parts. Nothing ever touches the floor and all racks are kept clean at all times. The sanding is done on special tables which have provisions for storage of sandpaper, receiving discarded sandpaper and also holding other sanding supplies, such as razor blades for removing runs, patching compound for an occasional scar, etc.

Cleanliness and Safety

Provisions are made throughout the entire layout for cleanliness and safety. Floors are oiled twice weekly, tilting trucks are provided for handling all drums, safety cans are distributed for all rags, and sufficient trash cans are available to handle all paper and miscellaneous rubbish. A corner of the department is set off for such work as testing viscosity of various paints, matching colors and other similar functions.

How We Pay Workmen

Despite all of the above, which, having occasioned considerable thought, we know that still more is required to actually keep our cost down to the minimum. This is the matter of getting the work done in the most economical manner. We handle it by a system of bonuses and piece rates. Every group working on an operation is put on a definite schedule basis, the performance of which schedules earns a bonus. Some processes that might be slighted have additional operations put into the production line of these processes, so as to insure their proper performance. Defective work that passes through a series of operations, carries a penalty to every operation back to where it originated. This makes every group careful to see that they throw aside all defective work as it comes to them.

All in all we feel that we have a department that is functioning well, is doing a good job and at a low cost.

Free Book of Solvents

An interesting and informative book about modern solvents has been published by the Commercial Solvents Corp., 230 Park Ave., New York, N. Y. The specifications, properties, uses and other information about acetone, butanol, butyl stearate, methanol and several other solvents are revealed in clear easy-to-read style . . . 36 coated-paper pages, 6x9¼-in. bound between heavy, blue-paper covers.

Developments During 1934

A Major Review of New and Improved Finishing Materials

MANUFACTURERS of finishing materials for the industrial trade were thoroughly wide awake during the past year. Apparently they went out into the field and searched for the most difficult, most puzzling and most unusual problems confronting users of standard and special finishing materials; then they returned to their laboratories and worked tirelessly to formulate and test materials, methods and schedules for giving the trade exactly what it wants, even though in some cases it was necessary to meet what appeared to be unreasonable tests and impossible conditions. As a result they now have a tremendous variety of new and improved materials which have practical merits and real value.

Someone called for a decorative and durable finish for inflated rubber balls. That requirement is now taken care of, as are also the demands for more flexible, durable finishes for coating leather, imitation leather, fabrics, paper, fiber board and composition materials. And speaking of flexible finishes, materials are now available which adhere to thin metal through severe bending, denting, twisting and impact tests.

Anti-rust and corrosion-proof finishes of several kinds have been developed, and metal finishes that withstand repeated heating to high temperatures—for example, finishes for exhaust manifolds on automotive and aircraft engines.

Who wants a refrigerator white that will stay white and resist all the various elements that tend to slowly destroy a good finish? Such a finish is available, and it can be had in whites and other colors. And there are sanitary lacquers for coating the insides of food containers; also safe finishes to use as coatings on toys and playthings for children.

For wood furniture and fixtures and other finished goods made of

• In this Review of Developments During 1934, more than 120 new and improved materials are listed under the following classifications:

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wood, many improved materials are offered; for example, combination stain-fillers, permanent, non-fading, non-grain-raising stains, bleaching solutions, sizing solutions for expensive perishable veneers, sealers, transparent coatings in gloss, flat or intermediate luster for and for not rubbing; color enamels, decorative novelty finishes, finish repair materials and polishes.

Perspiration-proof finishes, sign painters' paints, process paints, Venetian blind finishes, wrinkle finishes, metal furniture finishes —in fact finishes for all kinds of products—have been greatly improved in practical ways that really appeal to 1) the executive who purchases them, 2) the finisher who uses them, 3) the men who handle the finished products through various distribution channels, 4) the dealer that sells and backs up those finished products, and finally, 5) the ultimate buyer who uses the products and judges their value by how well the finish holds up.

Miscellaneous finishes such as those for electric cables, battery cases, briar pipes, paintings, tooth-paste tubes, and every other kind of article you can find inside or outside the super-department store or mammoth mail-order house, are to be found in the long list of improved finishes.

To quickly acquaint readers of INDUSTRIAL FINISHING with these latest developments and improvements, we again feature this review in easy-to-read form. The chief features of each material or process are given briefly. You can quickly pick out the materials in which you are chiefly interested. For further information about such materials you are invited to write INDUSTRIAL FINISHING; your inquiries will be promptly serviced.

Novelty Finishes

The highlights in novelty finishes, wherein an unusual attractive or novel decorative appearance is generally the outstanding feature, include the following:

Tortoise Shell Finish—A finish that produces the actual appearance of tortoise shell; consists of a ground coat of yellow lacquer which, when dry, is daubed with a special smut stain, and finally finished with specially formulated tortoise-shell transparent finishing lacquer. Although transparent, this is not a clear water-white lacquer, but possesses the deep, rich tone of tortoise shell. It dries to a high gloss. Adaptable for use on wooden umbrella handles, brush and knife handles, and various wooden or metal objects where a novelty finish is desired and where actual tortoise shell or composition would not be out of place.

Crystal Finish—A low-cost, one-coat, bake finish of excellent appearance suitable for use on a wide variety of articles. Produces unusual highlighting effects; adheres well to metal and withstands hard usage without chipping. Is available in several colors; spraying is preferable; thins with naphtha; must be baked only in a gas oven; size of crystals are regulated by heaviness of coating and amount of thinning.

Morocco Finish—A one-coat, low-cost finish for metal; outstanding highlighting effects; approximates a cloth covering appearance; has the fineness and uniformity of wrinkled depth as contrasted with the heavy course formation available in the past; has an apparent smoothness; is easy to clean; has remarkable adhesive power and is free from chipping. Air dries slowly; baking is recommended. Size of pattern is regulated by heaviness of coating and amount of thinning with naphtha.

Spedene Wrinkle Finish—A new line of wrinkle finishes made in attractive pastel shades, as well as the dark conventional shades; a bake finish that is adaptable to many uses, especially for articles on which imperfect metal can be used to advantage.

Shrivel Finish—Gives an attractive finish on any non-porous surface which can be baked at 200°F. or higher. The wavy effect hides imperfections in the metal surface in one coat; a varnish type product; bakes with a semi-lustrous finish; is extremely hard and tough, and resists water, alcohol, and grease. The heavier the coating, the coarser the lines. Parts put into the heat immediately after coating will have finer lines than parts let stand for a time at room temperature. Can be thinned with naphtha. Dark colors bake at high temperatures (200°F. to 400°F.); light colors bake at 150°F. Any desired color, especially light colors, may be obtained in a two-coat operation by first baking a coat of clear, black or dark color and applying over it a thin coat of good covering enamel of the desired color. Aluminum and bronze effects are obtained in this manner; two-toned combinations, shadings, etc., are likewise possible.

Floxol Finish—Produces an exceptionally smooth and soft finish resembling cloth, suede or velvet. By the use of Floxol compounds, large or small surfaces may be effectively finished to retain the original soft texture of the flock. The method of finishing is extremely simple, requiring nothing more than the application by spray or brush of Floxol compound, followed by a spray application of flock in the color or texture desired—rayon, wool or cotton; may be applied on almost any type of surface such as wood, glass, paper, metal or old finished surfaces. It has definitely found a place in many industries for mirror backing, lining of drawers, caskets, cabinets, jewelry cases, silverware chests, lamps, etc.

White and Color Enamels

Finishing materials listed here include enamels of the air-drying type and also enamels that can be used either as air-drying or bake finishes. They produce that smooth, lustrous, deep color coating that is so desirable on various products familiar to all of us.

Synpex Enamel—A lacquer material which has the quick drying properties of lacquer and the adhesion, flexibility and toughness of a high-grade synthetic enamel. It will stand baking at moderately high temperatures without becoming brittle. This fact makes it ideal for radiator covers. It is also applied as a ground coat on steel furniture, then grained with an oil-base ink and both materials baked in one operation. This eliminates extra handling and baking as compared with the use of a baking groundcoat. Unlike synthetic enamels, it may be thinned equal parts for spraying. Flat lacquer may be used as a final topcoat.

Gloss White Lacquer, No. 9007—The newest refinement in refrigerator finish; combines to an unusual degree every one of the properties to be desired in a refrigerator white; exhibits exceptional opacity and coverage, flows out smoothly and dries with the usual lacquer speed to a brilliant, lustrous finish. It is tough and hard, resistant to scratching and marring; is highly waterproof and blisterproof, and it is unaffected by grease; retains its whiteness indefinitely, eliminating the troublesome discoloration of cabinets in storage and in display windows. In combination with a correct priming coat, this finishing lacquer will produce a trouble-free, beautiful finish at reasonable cost.

Perspiration-Proof Enamels—A line of perspiration-proof enamels that have remarkable resistance to this type of abuse; obtainable in a one-coat black finish, and in two-coat color finishes.

Bexco Enamels—For gasoline pumps and trucks. Made in air-drying and brushing types for refinishing old pumps; also an air-drying or baking type for spray work on the production of new pumps and trucks; available in any color, also in white and clear. Characterized by improved gloss and color retention when exposed to sun and weather; resistant to gasoline and oils; has unusual adhesion, toughness and surface hardness; covers in one coat, sets up quickly, and hardens rapidly. Colors and tints are extremely permanent, the blues, greens and reds holding gloss and color much longer than paint or oil enamels. May be cleaned and polished or "Simonized" like a lacquer finish.

Bexolin Enamels—Synthetic enamels in a variety of colors, for general utility; high luster; excellent durability.

"B" Synthetic Enamel—An air-drying or bake finish for use on wood, metal or tile surfaces. Air-dries dust free in 20 minutes; to handle in 1½ hours. Bakes in 45 minutes at 225°F. to 250°F. or less, depending upon thickness of metal; has "fullness" and "building" qualities; reduces with petroleum solvents, coal-tar-base reducers or a combination of the two; flows out smoothly; shows no sags or orange-peel effects after it dries. The finish is lustrous, tough and resistant to water, oil and solutions of soap, acid and alkali. Skinning is minimized to the vanishing point; does not skin when reduced ready for use.

Venetian Blind Enamel—A quality product especially made for coating the slats of Venetian blinds.

Ron-Kote—Synthetic, sign-painter colors; specially prepared combinations of extremely brilliant, permanent, solid-covering pigments in synthetic vehicle . . . developed for the bulletin and sign trade. The material dries quickly, free of tack; retains high gloss for a long time. Requires no varnish overcoat. Has great hiding power; covers solidly; spreads easily and free under the brush.

Toy Dipping Enamel (Air-Drying)—A new dipping enamel for wooden toys; air dries in 12 to 16 hours; used directly on wood; has excellent sealing and hiding properties; good live colors. These toys are usually striped or decorated with a special striping enamel that air dries to handle in two to three hours.

Rapid Cote Enamel—A fast-drying material; dries to handle in 15 to 20 minutes; a one coat finish; for either dipping or spraying; may be baked 45 minutes for extreme hardness; adaptable to toys, novelties, kitchen utensils, etc.; can be obtained in attractive pastel shades.

One-Hour Enamel—Produces a durable finish of remarkable body and gloss; dries hard through in one hour; shows a coverage considerably superior to lacquer; produces a tough elastic durable finish suitable for kitchen cabinets, breakfast room furniture, refrigerators, etc. It has great exterior durability, with especially good gloss retention, and has given splendid results on wood and metal porch furniture and on truck

bodies. It adheres well direct to wood or metal without previous priming coats; is available in white, black and all colors; for spray application only.

Opex Striping Enamels—The latest refinement in the development of quick-drying, lacquer-base striping colors; dry to touch in 5 to 10 minutes, yet have free flowing qualities; have the desirable quality of being easily worked into the striping brush without thickening; can be safely wiped off with a clean, naphtha-saturated cloth within several hours after application, should an error be made in drawing the stripe. Once thoroughly dry, these striping enamels are durable and are unaffected by naphtha . . . are available in a wide range of colors. All colors cover solid in one coat; may be applied with a mechanical striping machine. Opex retarder thinner should be used if any reduction is required.

Bake Finishes

Includes primers and smooth-surface bake enamels in blacks and colors. Wrinkle finishes, which are also baked, are listed under "Novelty Finishes." The few enamels that can be dried either by baking or by air drying are listed under "White and Color Enamels."

No. 2612 Baking Metal Primer—For fabricated metal articles which require the ultimate in beauty and durability of finish; provides a tenaciously adhering and extremely hard, yet tough and elastic base, which makes the finish practically immune to chipping; fills unusually well and sands down nicely to an extraordinarily smooth and dense surface, which "holds out" the finishing coats, thus developing their maximum body and gloss; is highly resistant to moisture and provides protection against corrosion. The standard grade is a deep brownish maroon color and is especially intended for use under baking enamels and synthetics, although it can be adapted for use under lacquer; is suitable for a quick, high-temperature bake (15 minutes at 400°F.), or may be baked at a lower temperature, say 250°F. for 1½ hours.

Primo Primer—A transparent baking primer, particularly for use on metal, though it will air-dry on wood in 10 to 12 hours. Can be dipped, brushed or sprayed; will bake at from 350° to 425°F. in one hour, or may be baked at a temperature of 25° to 50°F. higher in less time, as production warrants. Is sufficiently durable to withstand the extra three or four bakings necessary when used under baking enamels. Is recommended for use under baking enamels or lacquers. Will adhere to any metal. Its rust inhibitive properties make it valuable when finishing parts for foreign shipment, on account of its resistance to salt air and humidity.

High-Bake Enamels—Excellent for metal office equipment; have a high degree of marproofness.

Synthetic Enamel, Q 8-36—Can be sprayed, brushed or flow-coated. Large, irregular pieces dip with perfect covering on sharp edges and do not show drip. The different colors

reduce with V. M. & P. naphtha in proportions varying from 25% to 40%. Manufacturers of tubular steel furniture, bridge tables, chairs, machine tools and other similar products requiring a durable attractive finish are using QS-36 to good advantage. Bakes at around 225°F. for one hour.

Super White Synflo—A bake finish especially suitable for metal cabinets of refrigerators. Principal features: its amazing retention of color and its tenacious adhesion to properly cleaned metal. Is unaffected by age, frequent washings, contact with greases, moisture, temperature changes or reasonable impact tests. Suggested finishing process includes Bonderizing the metal to insure freedom from rust or grease; one coat of White Synflo primer baked one hour at 350°F. (or the equivalent); one coat of Super White Synflo enamel baked one hour at 325°F. (or the equivalent); light sanding; a second coat of above enamel baked two hours at 260°F. (or the equivalent).

Syn-Por—A bake finish; is neither an oil enamel nor a nitrocellulose lacquer, but possesses a combination of the good qualities of both and has certain distinct advantages . . . is a tough durable finish. When applied to metal and properly baked, it develops powerful adhesion, remarkable surface resistance, a high gloss, and retains unusual elasticity and durability. Has strong resistance to outside elements and to acids and alkalis, and may be repeatedly washed in weaker alkali solutions without apparent damage to the finish. It is not affected by extreme heat or cold; is insoluble in ordinary petroleum products, such as gasoline, naphtha, benzine, and is only slightly soluble in alcohol. Available in a wide variety of bright, clear colors and tones. The white discolors very little with aging, is non-bleeding and odorless when dry, and in no way can it be considered injurious to the human system.

Sanitary Lacquer No. 85—Especially adaptable to food containers, such as drums in which shortening, lards and cooking oils are shipped; bakes 32 minutes at 400°F. It is impervious to the action of these various products.

Toy Dipping Enamels (for Baking)—An exceptional product that has excellent flowing properties on small or large toys; drips clean in four minutes; bakes 20 minutes at 250°F.; made in all colors, including pastel shades. Also includes an aluminum dipping enamel which has unusual flowing and leafing properties.

Aluminum Graining Ink—When applied over various shades of undercoats, especially gray and black, this ink gives a very attractive finish. This material requires a bake, comes ready for use and may be applied over any type of ground coat or followed by any succeeding type of clear coat. This ink is to be plate-grained and is applied in the usual manner. No reduction is necessary.

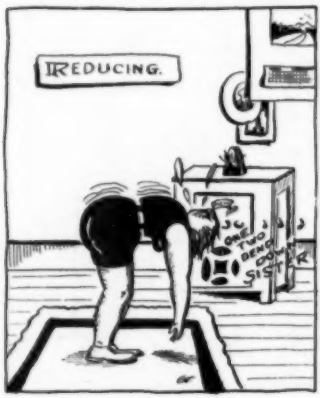
Lithocrome Black Coating No. 155—A new development in the field of black coatings that possesses some very unusual properties. For screw caps the manufacturer recommends that this black be used over his No. 1067 size; the formula, however,

shows a rather high degree of adhesion and where the fabrication is not severe, size is unnecessary. This black is essentially a specialty and by virtue of its unusual resistance to alcohol of any concentration, acetic acid, ink, saturated solution of ferrous sulphate, alkalis, etc., is finding wide application among metal decorators. Both the size and the black coating must be baked. The same company's No. 555 Lithocrome White Coating has the same characteristics of the black, with the exception of a slightly lower bake.

Black Pigmented Enamels — Furnished in different degrees of gloss, from absolute flat to eggshell and velvet finish. Will withstand several hours salt sprayed test; may be baked from 300° to 500°F. from 2½ hours to 20 minutes, depending upon production requirements. One of its chief characteristics and advantages is that the material takes on a false body which means there is no precipitation in either cans or drums; consequently, no waste and no variation in appearance of finished work, due to pigments not being incorporated with the vehicles.

Metal Finishes

The finishes mentioned here include clear lacquers for polished metal surfaces, color finishes for aluminum die-castings, metal furniture finishes and those not given in other classifications.



Brass Lacquer, E-830—A high quality product for use on brass or other smooth-surfaced metals; makes an excellent protective and beautifying coating for locks, door knobs, metal trimmings, brass nameplates, fixtures and is adapted to either inside or outside use. Very pale in color and dries to a high gloss, thus enhancing the natural beauty, without changing the appearance of the metal. This lacquer contains a special compound which neutralizes the acidity of the lacquer, and therefore prevents it from staining or attacking the metal upon which it is applied.

For spraying it should be reduced with lacquer thinner, the amount of reduction varying with individual conditions and the results desired. For dipping it should be reduced with special dipping thinner, the amount of reduction varying according to conditions.

Clear Metal Lacquer — Withstands outdoor exposure 12 months without breakdown or discoloration of the film; is perspiration and alcohol proof, as well as extremely economical.

Steel Strip Finishes—For application on cold-rolled steel strip. Applied by means of a roller coater on steel strip, a transparent or opaque finish effect is obtained. Following the application of the finish on fairly wide widths of steel, the steel is slitted in many cases and subsequently blanked and formed into intricate objects. A complete line of colors.

Buffing Lacquer—This clear lacquer brings out the richness of the under color coats and withstands the drag of the buffing wheel without softening or pulling. For application on compacts, cigarette cases, name plates, metal novelties, etc., where a

high luster, hard-enamel-appearing finish is desired. One or more coats may be applied over the color coats and subsequently be buffed to a high luster; gives an exceedingly tough glass-like finish.

Flexible Tube Coating—A flexible, alkali-resistant coating especially designed for the tubes in which toothpaste, shaving cream, etc., are packed.

Aluminum Die Casting Finish—A full line of colors in both the air-drying lacquer type material and the baking synthetic type; have excellent adhesion and flexibility on cast aluminum surfaces; will withstand washing with soap and water without detrimental effect on the finish.

Metal Furniture Finish—A finishing process which appears to be quite unusual and a long step in the right direction on the finishing of metal furniture. A ground coat is sprayed on and allowed to dry for 10 minutes. The graining compound is then applied, and is immediately followed with a coat of No. X-1668 clear Larcoloid finishing varnish. Immediately after the application of this varnish, the furniture is baked for 45 minutes at a temperature of 150°F. The resulting finish is one of unusual beauty and depth not obtainable in lacquer materials, and yet the whole three processes are accomplished inside of an hour's time and necessitate only one bake. The remarkable point about this whole process is that there is not one bit of gun cotton in any of these finishes, and they are in no way related to lacquers. Lacquer, however, can be applied over the finished coat, if desirable.

Cadmium Plate Water Dip Clear—A material freshly cadmium-plated that protects surfaces against oxidation and other stains, for instance, discoloration by finger printing. Immediately following the removal of the pieces from the final rinse and without drying the pieces, they may be dipped in cadmium water-dip lacquer; a film is deposited on the articles that eliminates the subsequent spotting.

Silver Metaluster Enamel—Metallic silver bronze finish with brilliant reflecting surface; serves a useful purpose in "dressing up" stamped steel or similar articles. It is merely necessary to thin equal parts and spray; no additional bronze powder is needed; an ideal and economical finish. Also available in cadmium shade and brilliant colors where special decorative effects are desired.

B. C. C. Lacquer Enamels—Have marvelous adhesion to metal without priming coats; adhere excellently to zinc; will stand reduction with equal parts of thinner, and cover solidly in one coat.

Clear Lacquer No. L-1032—Water white in color; carries a high solid content with a low spraying viscosity; can be used on any work where lacquer is used, but its true value is appreciated more readily when applied over very pale colored or aluminum bronze finishes. It will flow out to a full and even body finish free from wrinkles or runs. Its film is very tough and elastic and it imparts practically no color to the finish. It can be rubbed as any lacquer with very little effort, and if for some cases it gives too much body

it can be reduced with lacquer thinners to the proper consistency.

Savogran Cleaner-Polish—For safe use on bright, highly-polished costly metal products; no odor, no stain; comes in powder form and mixes with water. It is effective and economical.

Furniture Finishes

Materials under this classification include whatever is used in the preparation, finishing and polishing all grades of furniture, cabinet work, fixtures and interior woodwork.

Wateroil Stain Solvent No. 155—A perfect solvent for water stain powders, producing a non-grain-raising, fast-to-light, non-bleeding and quick-drying stain; eliminates blistered veneers and loosened glue joints; makes it possible to spray a uniform water stain without the need for wash coating and sanding before filling; may also be used on close-pore woods, producing exceptional uniformity; does not raise the grain; finishing coats applied over it do not soak into the wood, but remain on the surface to produce additional body.

Fruit Maple Uniforming Stain—For maple and birch. A rich, warm cast particularly adaptable to Early American lines.

Absolute Stain Seal—As the name implies, it is a combination sealer and stain. It shortens the time and labor and reduces all the expenses of two operations to the time and economies of one operation . . . an improved product formerly sold under the name of "Nu-Seal Stain."

L. S. 111 Clear Lacquer Sealer—Can be sanded 30 minutes after it has been applied; is tough, durable and gives a rich appearance to the wood.

Absolute Shellac—May be depended upon for absolute quick drying and all the other inherent merits that by rights should be peculiar to all shellac. It, is named in an attempt by the manufacturer to designate between good and bad or indifferent shellac, all three of which may be and are legally labeled "100% Pure Shellac."

Colored Sealer—Made primarily for light finishes and combines the effects of a stain or color coat with a sealing coat; to be followed with lacquer coats; particularly adapted for maple and all light walnut effects on parlor frames, novelty furniture, etc.; also for many special shades in various other light wood tones of different types . . . for sea green, coral, orchid and light blue effects. This material assures visibility of the grain, while at the same time imparting the particular color tone desired. In any of these finishes there is a distinct saving, either by the elimination of the stain coat, or by the elimination of color coats in the various colors referred to.

Wateroil Toner—Enables furniture manufacturers to produce a full depth color on walnut and mahogany by merely filling, sealing and misting a light coat of Wateroil Toner—eliminating hand toning and shading. Wateroil Toner is made from water anilines with a solvent which will "bite in" to either shellac or sealer and produce a transparent rather than an opaque color. This gives the

actual appearance of a water stained and filled finish, and it is equally as fast to light. Because of the fact that this product may be applied after the sealer has been sanded, it is possible in applying the toner to "touch up" any spots sanded through, in addition to serving the other purposes of toning, uniforming and shading.

Stain-Filler Combination—Stains and fills in a single operation; it employs the identical permanent anilines used in making water stains, hence the fastness-to-light is obviously on a parallel. It seeks out figure effects below the immediate top surface of the wood and thus develops a depth and increased character to the finish. It absolutely eliminates any hazards of loosening of veneers or glue joints, and in instances of core wood showing end grain, which usually calls for shellac to prevent stain penetrating, this operation is unnecessary, because S. F. C. does not turn such sections "black." The finisher can adjust the color of the S. F. C. promptly to fit circumstances, and also to control its initial drying during unfavorable weather conditions. The use of sealer may be eliminated, if desired, and either lacquer or varnish applied directly over the Stain-Filler Combination with good resultant adhesion and no graying of pores.

In special cases, such as on musical instruments, in particular, it is possible to stripe with white lacquer (to imitate celluloid or ivory) without bleeding. The product has clearly demonstrated its dependability as for the finishing of certain fine pianos, bar fixtures, radio cabinets, furniture, clocks, musical instruments, etc.

B. B. Primer—A first coater that dries rapidly, sands more like shellac, seals the wood, and gives a very smooth surface for re-coating. It is composed of a rapid-drying vehicle and a very fine silica base. The silica base also gives additional filling—fills the little air spaces left in the wood pores after the work has been filled with a paste filler. For spray work B. B. primer should be reduced three parts of primer to one part of benzine, gasoline, V. M. & P. naphtha or a good substitute turpentine, and for brushing reduce four parts of primer to one of reducer. In cases where less body is required it can be reduced to a greater extent. It sands hard and sharp, will not gum the sandpaper and can be re-coated with varnish or even lacquer in from four hours on.

Nanki Flat Varnish—Does not skin over; has unusual flowing and leveling properties; dries dust proof in 30 minutes; dries hard over night, and will not print; is clear in tone (not opaque or muddy) so that even the dullest sheens will look transparent over dark stains; can be rubbed or polished without smearing or blooming, as easy as any rubbing varnish; it is liquor proof.

Synflo Finish for Furniture—An entirely new and totally different finish; extremely pale, hard drying, elastic and full-bodied; gives a rich depth to any kind of wood. Synflo requires no special thinner, but can be reduced with turpentine; it sprays fast; dries for recoating in five hours,

flows out smoothly without orange peel, hardens over night to rub and polish, rubs clean without a smoky gray haze.

Glowood—A new furniture finish especially adaptable to bedroom, occasional, dinette and novelty furniture; soft, pleasing and appealing; pastel shades; enamel colorfulness; visiblity of grain; standard colors are yellow, green, orchid, blue and old rose.

Furn-A-Loid — The manufacturer claims that "This product contains over 50% more solids than any furniture lacquer we know of, and whereas some furniture lacquers contain a large percentage of gum and plasticizers 'Furn-A-Loid' contains neither —thus giving you 25% greater depth of film which will often save a complete operation in a highly built-up finish." Absolutely resistant to alcohol, water and citric acids. The product is remarkably elastic; may be reduced with a special reducer from 50% to 100% or more, depending entirely upon the finish desired. Due to its extreme length and toughness, a drying period of six hours is recommended before rubbing, where a rubbed finish is desired.

Larcoloid No. 1299 Clear Flat Varnish—Dries to a flat finish, but the formula can be adjusted to give almost any luster desired. It is dust-free in 30 minutes and thoroughly dry in one hour. Having a much greater solid content than lacquer, one coat will give a film equal to two or three coats of clear lacquer; can be thinned with any of the standard thinners, such as naphtha and Varnolene; is resistant to acid, alkali and alcohol.

Vin-O-Cel—A wood finish in clear and colors; tough, durable, rapid-drying, in clear and pigmented forms, in any sheen or gloss, and embodying all the desired essentials of high grade oil-varnish or lacquer. The clear is for use on mahogany, walnut and all other woods commonly used in the manufacture of furniture and fixtures. More coverage, build and durability than lacquer; high surface resistance; does not mar white; flows beautifully; sets rapidly; dries dust-free in 15 minutes; may be recoated in four hours; rubs with water and pumic; rubs and polishes after 24 to 48 hours drying; doesn't discolor or become brittle with age. The finish is proof against alcohol, water, greases, fruit juices, weaker acids and alkalis.

DeLuxe Rapid-Dry Varnish — For rubbing and polishing; has exceptional body; is a high grade product and dries extremely tough over lacquer sealers, primers and shellac; can be sprayed or brushed in the usual manner and in most cases one coat is all that is required. The final film is very elastic, extremely durable and will not readily bruise or chip. It is pale in color, is gas proof, will resist water and can be rubbed with either oil or water to a dull or polished finish without tearing out. If necessary, it can be applied one day and sanded and re-coated the following day and rubbed in from overnight to 48 hours.

G. L. 129 Clear Gloss Lacquer—Imparts unusual richness and velvety appearance to the wood and leaves a film of remarkable toughness and

durability; a strictly quality product.

Semi-Dull Flat Varnish—This flat varnish carries the same amount of solids as does the regular rubbing varnish; it dries tough and hard overnight and to a semi-dull sheen which does not mar or scratch readily; doesn't need rubbing; however, it will stand rubbing or an oiling off if this is desired. It gives a clear and transparent film; will repel water and can be sprayed from the drum if necessary; can be brushed, dipped or sprayed in the usual way, and will flow to a clear, even full-body film. This varnish does not skin and will not jell or thicken on long standing; manufactured in various sheens—some flatter and some with more brightness.

F. L. 125 Clear Flat Lacquer—Gives a gorgeous richness to the wood and produces a remarkably tough, durable film. Can be recoated in one hour; can be rubbed in five hours.

Blanchit (Bleaching Compound)—Its purpose is to provide furniture makers the means (process and materials) to initiate a new period in furniture finishing and to allow the production of the best in antique combined with the best in modern styles. Blanchit does this by giving entirely new coloring and beauty to woods now generally used, like American walnut-butts, mahogany, birch, Carpathian elm-burl, butternut, fruit-wood, Australian lacewood, etc.

Liquafill (For Veneers)—Glue-life and other liquid sizing materials have been improved for treating thin veneers cut from burls, crotches and stumps where, without this treatment, trouble would be encountered in flattening the veneers with the result that great wastage of high-priced veneers would occur.

Corallac—A first coater of the highest quality; made in white, pale amber, and orange. The white corresponds to the color of white shellac; orange corresponds to orange shellac, and the pale amber has a slightly richer color than white shellac. The pale amber gives an exceptionally clear, brilliant tone to walnut, oak, etc. Corallac reduces with alcohol or lacquer thinner or a combination of the two. Contains 28% solids; stands a high degree of reduction. It sprays out so smoothly that little sanding is necessary, and less rubbing is necessary on topcoats applied over it.

Cel-u-Lak—A very successful combination of resins and medium-viscosity nitrocellulose; obtainable in clear, flat and colors; affords excellent economy and appearance. Cel-u-Lak 3012 and 3203 are especially adapted to wood finishing as sealer and topcoat. Cel-u-Lak in colors has been very successful, both when sprayed and dipped.

Quickspar Finishes—For wood finishing; made in all colors. Material dries in a few hours; two or more coats can be applied in one day and dried at ordinary room temperature. Excellent for wood surfaces, especially for Venetian blinds.

Solvo Cleaner & Polish—Ideal for the clean-up and polishing operations on all grades of furniture. A wax-like preparation in the form of a heavy liquid; contains a very fine abrasive which will not scratch; dissolves grease and banishes grime, leaving a lustrous film which will not show finger prints. Rub it on with a soft cloth and then polish off with a dry cloth.

Luster Polish—A new idea in combining an additional element in a very high grade permanent luster; serves the dual purpose of final rubbing as well as polishing and waxing. It is possible with this item to complete a piano luster directly from the pumice stone rubbing operation, eliminating rottenstone or any other fine abrasive ordinarily used to bring the finish up ready for a polish. Luster Polish contains the finest abrasive obtainable and will absolutely rub out any fine scratches. At the same time it produces a clear brilliant luster, leaving a waxed sur-

face that drys hard in about ten minutes and adds value to the finish.

Flexible Coatings for Rubber, Textiles, Leather and Paper

There is an increased demand and considerable more general interest in finishes for the materials named above.

Flexible Rubber Lacquer—The increasing use of moulded rubber parts in automobile body construction, as well as in many other fields, has created a demand for a suitable finish to apply to rubber. Gravarco flexible rubber lacquer was developed especially for this purpose. It gives a tough, elastic finish, with excellent body and gloss, and extreme retention of adhesion and flexibility. The finish is suitable for exterior exposure, showing a minimum of chalking and no tendency to check. This lacquer has also proved satisfactory for other uses, including the finishing of leather, fabrics, and in fact nearly every surface which requires a high degree of flexibility in the finish. It is obtainable in black and a variety of colors.

Rubber Ball Lacquer — A special lacquer made for inflated rubber balls. This line of materials is outstanding in that in a very few seconds after the balls are finished, they can be loaded into barrels without any sticking of one ball to another. They can also be striped with special striping lacquers the same day without any danger of lifting.

Rubber Lacquers — A lacquer in either a high gloss or satin flat finish that gives a protective coating on rubber surfaces and eliminates that tacky feeling, giving the rubber a "dry feel"; has been used on women's galoshes, rubber novelties, etc., with excellent success; has extremely good flexibility and adhesion, permitting flexing and distensibility of the rubber without failing.

Flexible Lacquer for Textiles—For application on textiles through the stencil or screen process. They have been formulated both in colors and as a clear vehicle for the incorporation of gold and aluminum powders. The finish must be sufficiently flexible to withstand constant flexing of the cloth and, because it is used on women's dresses, tie material, etc., must stand subjection to dry cleaning without failure of the finish. Careful attention has been given to the workability of this material through screen process; sharp distinct designs result, permitting fine detail.

Cadmium Colors—For the leather industry which has long required non-fading red and orange colors in oil, both castor and raw linseed, for their work. A complete line of this type of material, especially adaptable to the leather trade.

Paper Lacquer—For machine coating or spray applications; flexible water-white lacquer, for use clear or with bronze powders; also opaque, gloss finish, flexible lacquer enamels for paper.

Anti-rust or Rust-preventative

Here are coatings for application on rusty surfaces to prevent the spread of rust; also prime and finish coatings which are properly classed as rust-resistant or corrosive-resistant finishes.

Trynite "R" Rust Destroyer — A red, limpid liquid possessing the unusual properties of combining with rust, destroying it and forming a transparent, elastic film which acts as a perfect bond between the surface and finishing coats of paint, enamel, varnish or oil. Ideal for coating and preparing automobile bodies, frames, refrigerators, sheet metal, dies, fixtures, castings, metal containers, machine parts, coils, tubes, pipes and other articles made of iron, copper, bronze, brass, aluminum, tin or alloys; can be brushed, sprayed or dipped. Is non-poisonous; non-inflammable, reacts quickly and dries in 10 to 20 minutes, but should

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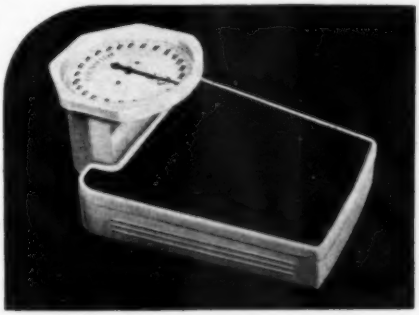

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be allowed at least a few hours to dry before recoating.

Gracolac Rust Primer-Aluminum—Designed for application right over ordinary rust without removal of same. The vehicle of this primer is so formulated that it allows for complete penetration through all the rust, right down to the solid metal. This vehicle replaces the air and moisture present in the rust pockets. The rust thus becomes a pigment for a perfect paint coating. The aluminum film which is provided adds to the long life of this ideal primer. One application provides a proper primer for rusty or smooth metal surfaces; also a proper finish coat for many interior jobs. For more permanent exterior work, it may be second coated any time within two or three years, with any desired paint. The vehicle is a heat-treated blend of tung oil, pure rubber, and Menhaden fish oil. This coating is waterproof, alkali resisting, and non-hardening. Considerable use is also made of Gracolac rust primer in clear form, for industrial metal priming.

Cromodine Process—For promoting adhesion and increasing the rust-resistance of paint applied to steel. A simple process in which cleaned steel surfaces are conditiond, or treated (not coated) so that when painted, the life of the finishing material is tremendously extended, without impairing the luster. The manufacturer supplies a crystalline material known as "Cromodine." This is dissolved in water contained in a stainless steel tank, heated with coils to a temperature of 170° to 180°F. Two rinse tanks are required, one containing cold water, which overflows freely, and the second containing hot water. This process provides an excellent foundation for high-bake enamels as well as synthetic materials and oil primers.

Anti-Rust Primer—A good covering, tenaciously adhering, oil-base undercoat which prevents rust; red oxide in color; eggshell luster; sets in two hours; dries hard in 24 hours. Brush as furnished; for spraying, reduce five parts primer to one part naphtha.

Corrosion-Resistant Primer—A good bodied, pigmented surfacer specially prepared to prevent corrosion. Adheres tenaciously to metals. It fills well and sands easily to a smooth surface. Let dry overnight before sanding. For spraying, reduce 50/50 with lacquer thinner. Allow overnight drying before applying the aluminum lacquer paint.

Permite Aluminum Paint—(Non-Corrosive) For inside or outside work; finest grades of powder used; when properly thinned it covers 700 to 750-sq.ft. of surface per gallon of paint; can be thinned with turpentine, V. P. M. naphtha or mineral spirits. Proper thinning does not damage its protective or adhesive qualities; dries to touch in four to six hours; dries hard in 16 to 24 hours.

Chek-Rust—A rust inhibitive paint: A scientific combination of rust-inhibitive pigments and special oils formulated especially for rust-proofing new or old metal surfaces and furnishing superior protection against atmospheric gases, water, acid and alkali. Serves as the ideal primer on rusted metal for succeeding coats of paint that ordinarily would not be satisfactory unless the surface were properly primed; penetrates the rust on metal, absorbing that rust and making it a part of the paint pigment, thus forming a perfect prime coating that may be recoated with Chek-Rust or any suitable finish coat material with positive assurance of a dependable, lasting job.

Heat-Resistant Finishes

These materials are an answer to frequent demands for attractive and durable coatings that will successfully withstand high heat steadily or intermittently.

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coating surfaces subjected to high direct heat for long periods; heated "red" hot, Aluminall Flameproof repeatedly cools without discoloration. It is recommended for whatever metal surfaces must retain a finished appearance even when superheated for long periods. It dries in from 15 to 20 minutes and is hard within two hours. It may be brushed or sprayed on and should be applied in light coats for best protection against high heat. When it is to be sprayed, thin 50/50 with naphtha.

Permite Aluminum Paint — (Heat Resisting)—May be safely used on surfaces required to withstand temperatures up to 1000°F. The vehicle is a synthetic resin that dries by evaporation of the solvents. Usually it dries to touch in two hours and dries hard in eight hours; should not be thinned or changed in any way; should be applied directly to cleaned metal surfaces, without a primer; should never be applied to cold steel as there is always a film of moisture present on cold steel which reacts unfavorably when the painted surface is heated.

A very hard protective coating for manufactured articles can be obtained by baking this heat-resisting Permite at 400°F. for 30 minutes.

Heat-Resisting Aluminum Finish—For articles that are subjected to temperatures of 600°F.; will withstand this high heat without serious discoloration, blistering, flaking, etc.

For Zinc, Galvanized and Aluminum Surfaces

To make paint or finish coatings stick to new smooth zinc or galvanized iron or aluminum surfaces has presented a very difficult problem, but treatments and coatings have been developed for successfully meeting this requirement.

Granodine—For treating zinc and plated surfaces—zinc-base die castings, galvanized and cadmium plated surfaces—to destroy the paint-shedding properties of these, and at the same time to add to their rust resistance. The process is simple and economical. A chemical known as "Granodine No. 31" is diluted with water, in a steel tank, and heated to a temperature of 160° to 170°F. Rinse tanks are required for rinsing the coating. The process requires clean metal first; then the cleaned surfaces are immersed into the heated solution. The coating is completed in from 25 to 50 seconds, after which the surfaces are rinsed first in cold water and then in hot water. Paint adheres well to the Granodine coating, which is not harmful to the zinc.

Metal Wash—A treatment to prepare galvanized iron or galvannealed metal for paint or lacquering. This wash will prevent peeling or chipping under all conditions and will prepare the surface so that the proper primers will adhere and give good priming results. Can be used under paint or lacquer. Is economical; the mixture will keep indefinitely.

Metal Cleaners

Cowles A. S. M. Cleaner—A product known as Cowles Anhydrous Sodium Metasilicate; may be purchased in either chip or ground form, the ground material being more readily soluble than the chip; a true metasilicate which is entirely water-free. This naturally results in a product having more cleaning value per pound of material used than one having a high moisture content. This unique chemical is readily soluble, has all the cleaning properties of the hydrated form of sodium metasilicate, and has made possible a much lower cleaning cost.

Spongy—A metal cleaner in which no petroleum derivative is used. Removes mill grease, oils and the effect of handling, so that any metal surface is ready for finishing. There is no residual material to interfere with the finish coatings. A peculiar fea-

ture seems to be that steel and iron, once cleaned thoroughly with Spongy, do not take on rust for a long period.

Repair Putties, Fillers and Cements

A small but necessary item in every finishing department is some sort of material for filling in a crack or dent or building up a damaged place to match the surrounding surface. Several excellent materials have been developed to meet every requirement of this kind.

Savogran Wood Putty—In powder form; this material mixes with water to make a non-shrinking repair plastic or putty which can be colored to match surfaces being repaired. It sticks like glue, hardens quickly and when dry it will take finish stains or coatings just like wood. The hardened putty looks like wood and can be cut, sawed, planed or sanded like wood. In powder form, in a closed container, it keeps indefinitely.

Las-Stik Wood Putty—Will not shrink or pull away from the surrounding wood; sticks like glue; does not contain celluloid or other nitrocellulose products; is made from real wood and a new synthetic resin; is available in natural wood finish and enamel colors.

Kraxtay Crack Filler — Comes in powder form; mixes with water in the proportion of about 4/1 to make suitable repair putty for wood finishes. Comes in natural wood colors; dries rapidly; adheres well to wood; doesn't shrink when it dries; can be sanded smooth like wood and will take any wood finish stains, sealers or primer coats satisfactorily.

Alumilastic (Caulking Compound) —For new work and repair work where a lasting flexible material is required. Withstands heat, sunlight, cold, water or dampness and vibration; adheres to any reasonably clean surface; contains aluminum powder; is available in four types to suit various conditions in industrial and maintenance work.

Porcelain Cement — For repairing damaged porcelain enamel finishes. Comes in white and colors so the finish being repaired can be matched perfectly. Sets quickly; can be smoothed out so that no overcoating is necessary; hardens in a few minutes; must be heated to remove chill and is then applied with a thin, flexible, hot, clean knife; surplus can be scraped or sanded off. To restore luster, touch lightly with heat again.

Miscellaneous

Master Color Service—A new master color book which explains in detail how to match more than 1800 automotive colors with only 17 tinted colors. The book is kept uptodate with the latest color chips and formulas furnished by the company that supplies it. Advantages; the paint shop can perfectly match all colors, tints, shades and hues, new or faded, with a minimum stock of colors.

Color Match Guide—Opex slide rule color match guide covers the complete range of shades—from light to dark in each color family—selected from the most popular motor car factory standard colors. It is possible to find a color match for almost any color, whether it be new and bright or old and faded; 600 color plates (representing matches for over 1,500 of the most popular factory standard colors) are furnished with the color match guide and in each instance the painter is offered two suggested trim colors from which to choose, as well as one striping color. Thus, complete and effective "color" combinations are assured. (Protected by copyright and patent.)

Process Colors—A satisfactory synthetic type of silk-screen process colors that permit screening three and four coats a day, has been formulated. These are presented in a beautiful array of colors . . . shown on a complete color card.

Process Paints—Due to their extended use, a line of process paints and an extender generally used with such paints have been perfected. The pigments are finely ground of non-fading colors, and do not clog the screen. These materials will meet the most exacting requirements of this class of trade.

Battery Case Lacquers—Specially formulated products for use over asphaltum battery cases. Most lacquer, when applied over such cases, causes the asphaltum to bleed into the finish, with discoloration as the result. These products, however, prevent bleeding. They come in clear gloss, black, and green, with other colors available upon request, and are formulated to cover in one spray coat.

Briar Pipe Finish—A beautiful, lustrous, flexible, air-drying lacquer which comes ready to spray. It retains its luster because its fine pores allow the moisture to "breathe" out. This unusual characteristic prevents blistering, flaking or peeling. Thousands of service tests have shown that high heat from steady smoking and perspiration from constant handling do not affect the finish.

H. K. C. Palegold Powder—Has extreme fineness and exceptional brilliancy; can be used for striping or backing of glass.

Waxand—Provides the means of greatly improving shellac and lacquer finishes. It is also largely used in spindle, spool and handle manufacturing plants for finishing with one operation, either right on the lathe or by buffing and tumbling.

Marble and Wood-Grain Decalcomania—Marble, onyx and wood veneer recreations are available in sheets measuring approximately 32x50-in.; these materials, especially the marbles, are being used on caskets, grave vaults, wall boards, automobile interiors, vending machines, furniture, etc.

Chi-Namel Coat-O-Lite—A superquality ready-for-use paint that dries with a soft velvet like finish that is neither a dead flat nor a high gloss. Easy to apply; works easily; flows freely; does not show laps or brush marks; no offensive odor. The ideal finish for all interior surfaces, new or old . . . in white and eight attractive tints.

Berrylac—May be used as a finish coat on priming coats, or as a one-coat finish on metal or wood; is applied by spraying or dipping; adheres directly to the surface; air dries like lacquer; dries hard but does not become brittle; will not print when packed; may be force-dried without sweating, and a 20-minute bake hardens it thoroughly.

Aluminum Gold Bronze—An entirely new gold bronze which, by the addition of aluminum metal in the alloy, makes the gold less tarnishable. Yields large covering and spreading capacity. Produces a rich durable finish which can be applied to paper as well as to the surfaces of other material.

Aluminall Lacquer—Especially formulated for resistance against gasoline and oil and is therefore particularly adapted to the finishing of tank and service stations, tank boats, trucks, pumps and machinery where considerable lubricating oil is used.

Kahnsistent Aluminum Paste—Will mix with a suitable vehicle of a varnish type for spraying or dipping, remarkable in smoothness, brilliancy and covering capacity; is very brilliant and very white, and can be used on metal, plaster, cement, stucco or any metallic or leather surface.

Aluminum Vehicles—Liquids into which aluminum powder is mixed to make aluminum paint; eight different kinds (including varnish, lacquer, synthetic and asphaltum-base materials), each one for a different set of conditions and requirements.

Casket Finishing System—Includes the following:

1) Primer Surfacer QE-89. This primer surfacer gives the maximum

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PLANTS: TERRE HAUTE, IND., PEORIA, ILL., WESTWEGO, LA., HARVEY, LA., AGNEW, CALIF.
PROMPT SERVICE FROM BRANCH OFFICES AND WAREHOUSES

Products of Commercial Solvents Corporation, including Rossville Alcohols, are available in mixed carloads and in compartment tank cars, as well as in cans, drums, carloads, and tank cars.

of durability and does not chip even when struck a sharp blow.

2) Bronze Medium No. 72-C. This lays the powder smoothly and is so tenacious that it can be used either directly on steel or over the primer. It does not gell or turn green when standing with powder, insuring a true silver appearance to the final finish.

3) Top Coat QL-45, which flows out free of orange peel and provides a good luster for an unrubbed job, and can be readily rubbed. Has the appearance of unusual depth and beauty.

Venetian Blind Finish, QS-202—An economical, durable and practical finish in two coats on Venetian blinds. This is a synthetic product which reduces with V. M. & P. naphtha. An unusually attractive finish at low unit cost.

No. 1305 Gravarco, Non-flaming, High-Tension Cable Lacquer—A good cable lacquer should resist to the greatest possible degree the destructive agencies to which ignition cable is subjected. Probably the worst of these is heat, and especially hot oil, which penetrates and rots the rubber insulation. In Gravarco No. 1305, this protective feature has been highly developed. Prolonged exposure to high temperature (300°F.) has no apparent effect on the coating. Immersion for 40 hours in an agitated mixture of motor oil and kerosene maintained at a temperature of 225°F. produces no sign of cracking or swelling and almost no discoloration or loss of flexibility. The coating maintains good flexibility down to a temperature of zero F., and when applied to properly constructed cable meets the usual "Corona test," with no failure occurring up to 50,000 volts. It is non-flaming; when held in a direct flame, it will only char and will go out immediately when the flame is removed.

Sparox—A specialized marine coating material; a clear marine coating for finishing the natural woodwork (exterior or interior) surfaces of yachts, cruisers and motor boats, as well as their various wood accessories. Is of unusual clarity and lightness of color; has the free-flowing qualities of a varnish and quick drying characteristics, thus allowing speedy brushing applications of the multiple coats essential to the complete marine finish. Finishing jobs can be scheduled on a basis of two coats per day. Has remarkable adhesion, rock-hardness, non-scratching qualities, resistance to the elements, to color-darkening under sun exposure, to checking, chipping or any other form of erosion.

Drigard Finishing Products—Clear waterproofing, wood stain, wood filler, rust-proof coating, first coater, and wood preservative. These products are noted for their positive and permanent waterproofing qualities on all types of materials and surfaces without affecting the texture, softness or color . . . applicable to all fabrics, paper, metal, wood, stone, brick or concrete. Drigard Clear does not change the appearance, color or texture of the surface, nor does it clog the pores, but gives a positive waterproof protective coating wherever used. Used alone, it waterproofs completely, but in many cases the surface may be finished in the usual manner after the Drigard treatment. In some cases, Drigard may be incorporated with the finishing materials.

Apcothinner—The New Deal in petroleum thinner . . . a radical departure from the old . . . dries as fast as V. M. P. naphtha. Used in enamels and baking japans, it holds much of interest for those who have not tried it . . . old troubles in dipping and spraying are more easily avoided . . . It is as safe from fire hazard as a wood alcohol.

What is Apcothinner? It is a highly refined fraction of petroleum; is made from a mid-continent crude oil, which is especially adapted for petroleum solvents. Apcothinner is made under most rigid specifications.

1876 - - 1935
LACQUERS

Our oldest customers date back to the founding of our business. In time alone, this record tells you little. But consider the countless changes in finishing requirements in the 59 years past. We have kept step with them all and are meeting our customers' exacting needs *today as we did in 1876.* That is the side of the record of which we are particularly proud.

Maas & Waldstein Co.
430 Riverside Avenue Newark, N. J.

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It must pass a severe test for uniformity. Apcothinner is the same yesterday, today and tomorrow.

Lakeroff Liquid Soap—A blend of solvents and a special soap which has the property of emulsifying with water, all lacquer, paint, enamel, etc., with which it comes in contact. Its use for removing these materials from the hands is a decided advantage over the customary harsh solvents, as it helps to prevent chapping and roughening the skin caused by the use of thinners. It also serves as a hand lotion by applying to the hands after washing. It should be applied to dry hands by rubbing into the coated parts of the skin until all foreign matter is softened and loosened. Water is then added gradually until hands are rinsed clean.

Aluminum Silver Bronze Powder—An entirely new alloy, made by a new process, which more closely resembles the true silver color. It can be obtained in six different mesh sizes suitable for fine industrial finishing.

Devoe Sanding Lacquer Sealer No. 924—A sanding wood sealer, which at spraying consistency will deposit great building properties. As a sealer this product, in addition to sealing the wood filler, will hold out succeeding applications of either wood lacquer or varnish. Sands free in 30 minutes.

Devoe Clear Wood Lacquer, No. 923—A tough, durable and element-resisting wood lacquer which, in its logical application in wood finishing schedules, will deposit high solid (building properties). This light, amber-colored lacquer is at spraying consistency.

White Refrigerator Lacquer, No. 2691—A basic lacquer which will deposit greater solids onto the work and resist such elements as humidity, grease, abrasion, impact; maintaining purity of color, ease of patching or spotting, and eliminating rubbing and polishing, since it deposits a high gloss finish.

Pad-Over—According to the manufacturer's literature this "is a new scientific preparation made especially for easy application over wood or metal surfaces. It is made from the toughest and most durable material from which a finish can be made; dries quickly and hard with a nice glossy finish that will withstand constant wear. Can be applied over any old finish; is not affected by hot water, hot dishes, alcoholic beverages, nor does it show pressmarks. It can be scrubbed with soap and water without affecting its fine, glossy surface; easy and simple to apply. Take a soft, lint-free cloth, fold it in the shape of a pad, tap it into Pad-Over and simply wipe over the surface to be finished. No brushing, no rubbing, no polishing necessary. Anyone can apply it with ease. Can also be sprayed over any finish."

Hardens Concrete Floors

In a recent development, the Stonhard Company, 401 N. Broad Street, Philadelphia, Pa., has perfected a surface-hardening treatment for concrete floors that possesses many advantages over methods formerly used.

Heretofore, the chemical action necessary to make flush hardening treatments effective, in many instances, failed to take place, with a resultant inconsistency of uniform results. Many causes were blamed, and even in those instances where the desired chemical action was attained, surface pores in the concrete remained open to become pockets to hold small quantities of oil, acid and other foreign matters while the destructive action of these disintegrating agents was taking place.

Stonhard concrete surface treatment not only penetrates concrete floor surfaces to weld the cement and aggregate into a solid mass, but it is also a vehicle for a solid that fills and seals the surface pores, eliminating entirely the pockets that hold disintegration agents. Microscopic observation proves this fact. An abrasive test on floors that have received this treatment gives evidence that a floor so treated will withstand wear 162.5% better than an untreated floor. The cost of treating a floor in this manner is negligible . . . can be applied on concrete floor areas without interrupting production or the regular routine work.

Solves Synthetic Enamel Spray Problems

Above: Close up view of water-wash chamber. Arrows indicate course of spray fumes. Left: Front view of water-wash booth showing water pump and clean-out chamber.

BINKS NEW Water-Wash Spray Booth

No longer need your exhaust fan and exhaust pipe be clogged with stringy, sticky synthetic enamel. No longer need you worry about the requirements of fire underwriters and health authorities. This new Binks Water-Wash Booth washes the spray fumes to almost 100% efficiency before sending them out on the air. Eliminator plates enable water to be used over and over again. Investigate! Send today for full information and prices on this new Booth.

BINKS MANUFACTURING CO.

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Branches in Principal Cities—Manufacturers of COMPLETE Spray Painting Outfits

The Romantic Road of Industrial Finishes—IV

by R. J. Fairburn
Zapon-Brevolite Lacquer Co.

In this final installment of the series, the author continues his discussion about colored pigments—reds, blues, yellows, browns and metallic bronzes—which are employed to give color and opacity to lacquer enamels and paints.

THE MATERIALS used in manufactured pigments come from a variety of sources. Some of them are a form of plant life such as madder root used in producing a red. Others are from insect life or animal life; an extract from the cochineal (an insect) is used in producing carmine. Animal waste, such as hoofs, hide and blood, is used in making a blue. Others are obtained through the handling and treating of metals, one of the blues being from copperas, which is a by-product in the pickling of iron. Other substances—like sulphur, for example—are used in making various colors. While most of these colors are made in this country, the materials used in their production have their sources in various parts of the world.

Blue Pigments

Blue pigments are not found in nature and are all manufactured products. Some of them are made from such combinations as lead chromate, lead sulphate and basic lead carbonate. Others, such as Chinese blue, are ferric ferro cyanides. There are also blues which are organic toners.

Red Pigments

Many red pigments are produced chemically and are either lakes or toners. Thus we have many reds, such as para, cadmium, toluidine, lithol red, madder lake, etc. Red lead is oxide of lead and, unlike the lake pigments, it requires no inert to give it "body." Venetian red is a hematite and is ground with an inert. Both of these two reds, as well as the chemical ones, have their sources in this country.

Yellow Pigments

Yellow pigments may be divided into natural pigments and manufactured pigments. Of the natural pigments, ochre, both raw and calcined, is the better known. Of the manufactured pigments, combinations of lead chromate and lead sulphate are better known. There are also some yellow lake colors.

BASICALLY NEW!

DIAMOND B SYNTHETIC INDUSTRIAL ENAMEL

● After three years' painstaking research, Berry Brothers has developed an entirely new Synthetic Industrial Enamel. This product is basically new—not merely a modification of present synthetics. The resin is a development of our own laboratories and is available in this product alone.

These Features
Distinguish Diamond B Synthetic Industrial Enamel

- "Water Resistant."
- Free from skinning troubles.
- Eliminates orange peel.
- Bakes rapidly.
- Heavy body.
- Air dries hard.
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- A new low price.

Diamond B Synthetic Industrial Enamel is new in conception—new in results. It has been tried and adopted by several well-known manufacturers. Use it on wood or metal—indoors or out. Write for complete details. Simply address Industrial Sales Division.

BERRY BROTHERS

VARNISHES - ENAMEL - LACQUERS - PAINTS
DETROIT, MICHIGAN • WALKERVILLE, ONTARIO

Brown Pigments

Brown pigments are, for the most part earth colors. Umber is a brown clay containing iron and manganese. The best variety comes from Cypress and is called Turkey umber. Sienna is another brown pigment. These pigments, as first prepared, are called raw umber and raw sienna. After having their color changed by treating them with fire they are known as burnt umber and burnt sienna.

Van Dyke brown, as used in shading stains, etc., is a fairly weak brown pigment that is found in various parts of Europe, in natural deposits. It is produced artificially in this country from the bark of trees.

1,600 Pigments

There are approximately 1600 different pigments described in present chemical literature. These are the pigments found in commercial use. Many are special color modifications necessary for some specific work. Others must have specific qualities of oil wetting, luster producing, flow under the brush, outdoor resistance, etc. Most of the pigments that are not described in this article, which are in common use, are manufactured —some being the result of straight chemical reaction, and some coming under the classification of lakes and toners.

Metallic Bronzes

Other pigments are the metallic bronzes, such as aluminum, gold, copper, silver, etc. For the most part they are aluminum or copper, treated to give the desired color. A few of them are prepared in this country but the majority of them come from European countries, notably Germany.

$500,000,000 in Materials

The finishing materials industry involves $500,000,000 worth of raw materials annually . . . gleaned from many countries and offering a means of livelihood to people of all races. We have touched on only a few of the materials used and have said nothing at all regarding containers used, paper labels, printing ink, packing cartons and boxes, motor trucks, railroad trains, steamships, etc. The hundreds of buildings and equipment involve many other people until there is hardly a country or industry that is not affected directly or indirectly by the making and marketing of lacquers, varnishes and paints. So widespread is the maze of roads that reach to the different branches of this giant industry, that it is an excellent barometer of industrial conditions as a whole.

Finishes for Outdoor Products

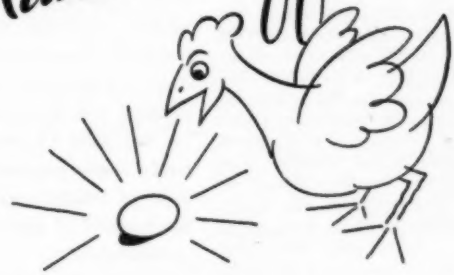
Finishes for such outdoor products as commercial vehicles, rail rolling stock, store fronts, filling stations and machinery are described and explained in a 16-page booklet about Cook's, Coroc 801 industrial finishes, published by The Cook Paint & Varnish Co., Kansas City, Mo.

Sales Engineer of Aluminum Industries

Fred S. Winfield, for the last four years associated with automotive and industrial manufacturing concerns, has joined the field staff of Aluminum Industries, Inc., of Cincinnati, manufacturer of Permite Products, as sales engineer, according to announcement of H. J. Hater, general manager. Mr. Winfield will have headquarters at Detroit, as assistant to B. J. Plumley, district manager, and will contact automotive and industrial organizations in Detroit and Michigan.

FRESHNESS

Makes a difference



ALL shellacs are not alike. They vary in quality. And they vary in effectiveness in proportion to their freshness.

Du-Pros is made only from pure shellac gum and Government test alcohol. To insure quick drying, easy sanding and a tough, durable finish, every gallon of Du-Pros Strictly Pure Shellac is freshly made when shipped.

Other fine Day finishes are enamel, stain, filler, sealer and lacquer.

DU-PROS *is fresh shellac*

JAMES B. DAY & CO.

• CHICAGO •

Tumbling Wood Parts

by C. I. Sweet
Finishing Engineer

THE FIRST thing to be considered, after deciding to go in for tumble finishing, is the proper equipment. For general work, that is for turnings of all shapes, I prefer a tumbler constructed so as to be octagonal shaped, each side measuring about 12-in. This, of course, will govern the diameter of the tumbler. The length of the tumbler should be made to accommodate the quantity of turnings to be finished at one time. A tumbler 4-ft. long will handle a large bag of turnings such as used by the wood turning concerns for shipment.

Details of Tumbler

The tumbler should be mounted in substantial bearings, one at each end, which allows it to operate in a horizontal position.

Ends of the tumbler should be solid and made from hardwood, birch or maple, about 1½-in. thick. These ends should be made of two layers or thicknesses of wood, one grain cross wise with the other to prevent the ends warping. This allows the use of ¾-in. lumber which is more readily obtained than 1½-in. lumber.

The edges of all sides (or staves) of the tumbler should be accurately beveled so they will fit close together, to make the tumbler as liquid tight as possible, although a small crack will soon fill with material and there will be no waste. These edges can easily be beveled on a woodworking jointer.

In the assembly of the tumbler, all sides but one should be fastened to the ends with screws.

"In reference to tumbling finishes, I have formulated and worked out the methods for many of those on the market today. I have been in very close contact with this line of finishing for the past 12 years and have made many experiments, the results of which I will explain for the benefit of anyone interested in this finish.

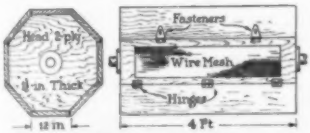
"I have traveled over many states for various firms, helping manufacturers become familiar with the use of these materials, and if the methods I have here described will be put in use, I am sure many firms will save themselves a lot of grief. . . .

"I shall be very glad to answer any inquiries you may send me along the lines of tumbling wood parts."—THE AUTHOR.

● ● ● ●

Use screws, as nails soon come out due to the vibration. The remaining side, left unfastened, is used as a door.

There should be two doors for each tumbler, one solid like the other seven sides, and the other a screen frame to fit the opening of the tumbler. This frame should be covered with wire cloth or mesh of about ⅜-in. mesh, unless the turnings to be finished are smaller than ⅜-in., in which case a smaller mesh should be used.



End elevation and "door" views of octagon tumbling barrel.

To make this frame or screen door, an extra side like the others may be used and the center cut out with a jig saw; wire mesh is placed over the cut-out.

Both doors should be equipped with hardware to allow a quick change from the solid to the wire mesh door. Regular door hasps or door bolts work very well, providing a simple method for a rapid change of the doors.

When the tumbler is completed and ready for installation, it should be equipped with tight and loose pulleys, or some method which will enable the operator to start and stop the tumbler at will.

When the tumbler is mounted and in place, it should operate at about 30-r.p.m. To obtain the best results, this speed should not be exceeded.

Type of Tumbler to Use

The above type tumbler, as mentioned before, is suitable for all kinds of turnings including those having flat surfaces, as the action caused by the octagonal-shaped tumbler prevents the flat surfaces from sticking together. However, if the turnings are small and have no flat surfaces, very successful work can be turned out with the ordinary 50-gallon wood barrel. This barrel may be operated in the same manner as the octagonal tumbler—by providing two doors for the opening, and operating it at the same speed of 30-r.p.m. Very nice work can be produced on such parts as beads, knobs, small handles, etc.

The temperature of the room in which the tumbling is done should be about 75° F. Satisfactory results cannot be obtained if the room is cold or damp. This is very important.

Preliminary Tumbling

Place the turnings in the tumbler, adjust the wire mesh door and allow the drum to revolve a few minutes until all dust and dirt have been sifted out. If the operator is not familiar with the use of tumble materials, it will be a great help later for him to get a fairly close estimate of the amount of finishing material required for each type of turning as he loads the tumbler. A record of this should be kept, as each type of turning requires a different amount of material.

Pouring on "Tumble Base"

The turnings are now ready for the application of the tumble base. Pour a small quantity of tumble base over the turnings—about a cupful at a time, allowing the barrel to make a few revolutions after each cupful, with

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Master

"AMERICA'S SMOOTHEST, FASTEST SPRAY GUN" — One gun sprays every finish from lacquer to calcimine. Assembly includes gun, 2 caps, 3 needles, 3 nozzles, cup and cover—for $20.50.

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1400 Fulton Street Chicago

the solid door in place. The tumbler should not revolve long enough to permit the turnings to become dry, but just enough to allow them to take up the material. These applications should be repeated in rapid succession, that is until the turnings are completely covered. Too much tumble base must not be used, as it will pile up on the turnings and cause them to have a rough finish. I suggest keeping a record of the amount of material used for future reference. When the correct amount of material is determined, this can be added in one application on future lots.

Room Temperature

If the room temperature is not up to about 75° F., and the material does not dry with the solid door on, remove the door and replace it with the wire mesh door for a few moments. However, this should not be left on too long as the wire mesh door will cause the material to dry too rapidly, making the turnings rough. Leave the wire mesh door on just long enough to allow the turnings to commence drying. Then replace with the solid door.

Final Polishing

When the turnings are thoroughly dry, they are ready for the polish. Tumble polish is obtained from the same concerns who manufacture tumble lacquers and other tumble materials. A polish of the same color as the tumble base should be used. About two ounces of the polish should be added to the turnings at each application, at intervals of about ten minutes, or as soon as the turnings begin to show a gloss. These applications should be re-

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WATEROIL STAINS

They are made **entirely** from water soluble anilines and non-grain-raising solvents. Fast to light, non-bleeding and **quick drying.** Wateroil Stains do not blister veneers or loosen glue joints.

No. 1900 Cleanup Polish

The only known item that will eliminate bluish bloom or haze experienced with any ordinary rubbing oil or polish. It is miscible in water, economical. Leaves the surface clean, free from dust collecting and finger marking.

V. J. DOLAN & COMPANY

Wood finishing materials of "Unquestionable Quality"

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Better Finishes---Bigger Savings

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AIRRUBBING
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F707 Superior Airrubbing Machine
Showing Two Pad Assembly

WRITE TODAY for technical bulletin giving you full details of savings possible. Proven economies of $30,000.00 a year secured with Paasche Airrubbing and Airsanding Machines. Easy to handle; well balanced; free from vibration; give years of uninterrupted service. Used by leading furniture manufacturers.

Paasche Airbrush Co.

1925 DIVERSEY PARKWAY
CHICAGO, ILL.

peated until the desired gloss is obtained. The entire polishing operation should be done with the solid door in place—unless, as in the base application the room is cold and the turnings will not polish. Then put in the mesh door for a few moments until the gloss starts to appear, when the solid door should again be used and the pieces allowed to tumble until the desired gloss is obtained.

Supplementary Remarks

The materials used in the tumbling process herein mentioned are advertised in your publication, as I have found that through many experiments all will work if this method I have explained is carried out.

I should have also added that it is very important that the material and turnings should be stored in a room of 75° F. temperature for a short time before tumbling begins . . . . that is, long enough for them to become warm. If the finishing materials or turnings are cold this will, in most cases, cause a muddy or cloud appearance.

electric knife heater

Positively guaranteed against overheating . . even if current is left on continuously . . and will not burn out under these conditions.

Current consumption less than 5c per day if used continuously all day. Try one 30 days at our expense. At end of that time either return heater or send order to purchase at $6.50. Specify voltage desired, 110, 120, 220 or 240 volts.

OP-AL Electric & Mfg. Co.
Indianapolis Indiana

Fish Skin Flowers

THE GENERAL procedure followed in making fish skin flowers, which have become so popular recently, is to first have available a supply of very thin soft wire that can be easily bent to any shape desired, and which will stay in whatever shape it is bent. Each flower petal is shaped from a looped piece of wire; the wire that extends outward from the loop forms the stem of the flower petal. In other words the thin soft wire forms the skeleton work for the flowers.

These wire loops are then dipped into webbing or bridging lacquer, which (like a bit of soapy water for soap bubbles) forms a thin film across the open wire loop. When the lacquer is sufficiently dry the lacquered wires are dipped into a solution of gelatin, the purpose of which is to protect the webbing lacquer from what comes later. Following this gelatin coating, the flower petals are dipped into a coloring liquid —generally a water solution of dye. When this coloring material is dry the petals are dipped into pearl lacquer. This completes the petal. There is nothing very difficult about it, except there are a few little details to observe.

The webbing lacquer must be of such a nature that it will bridge the wire and flow down, either leaving a wrinkle effect or a smooth effect, as desired. This is a special lacquer which leaves a very thin film on the wire. Obviously if the pearl lacquer were dipped immediately over it, the film would dissolve and there would be nothing left to span the wire, therefore, the gelatin coat

is introduced to protect the original lacquer film. After that the flower petal can be treated in any way desired.

The pear lacquer is special, as it must be flexible enough to stand the bending and shaping which it is subjected to. It must not shrink away from the wire, and it must be rapid drying enough so that it will not flow off the petal before drying—and still it must not be too fast drying or it will "freeze" half way down, leaving a line on the petal.

Finishing Room Fires—IV

WHILE I was finishing foreman in a factory that made fiber furniture, we had three fires break out in the mixing department. In this department I had two men who did nothing but mix coaters of different colors and mixtures for the spray operators. I had 14 sprayers and they all had to come to this mixing room to get the kind of materials necessary to use.

A new finish was produced by the use of chromic acid mixed in water and sprayed on the fiber pieces. The reaction of this solution on the glue size, which was already on the fiber, produced the appearance of a tobacco brown color. This finish had been wanted by this company for many years but up to this time it just hadn't been worked out. Without knowing the dangerous position we were all in by using and mixing this acid solution in the same mixing room with thinners, etc., we had three fires, and did not know what caused them.

The chromic acid was weighed out on scales at one end of a bench in this room. The operator doing this work would occasionally spill a small portion of the acid on the floor, or on his clothing and then onto the floor. This room was kept spotless by using varnish remover made up of acetone and benzole, and then moping the floor. As soon as this acid would come in contact with

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BEUGLER STRIPER

FAST . . ACCURATE . . SIMPLE . . Perfect striping. Easy to operate. Works in any position. Straight or curved lines. No dripping—no clogging. Equally suitable on all surfaces. A quality tool! Endorsed by the largest manufacturers and finishing shops. Eight guides and two wheels included. Order from your supply house or from us direct.

Stripe Size / Wheel No.
16
25
43
73
93

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the acetone or alcohol and benzole there would be an explosion, followed by a fire. As I said before, three fires were caused before we finally found the cause. The last fire in this department became almost uncontrollable, but with the use of two 3-gallon Foamite tanks and a dozen smaller ones we managed to put it out before the fire department arrived. I certainly am a booster for this type of crew of fire fighters in any finishing department. —F. WILLIAMS.

Lacquer Finish for Buses and Trucks

THIS FINISHING schedule is particularly recommended for the metal surfaces of buses and trucks. However, before the priming coat is applied, these surfaces must be made chemically clean—free from grease, rust, oil or other foreign substances.

OPERATION NO. 1 — PRIMING COAT: Spray on one uniform coat of pyroxylin red oxide primer; air dry at least 30 minutes at a room temperature of not over 75°F.

NO. 2—SURFACING COATS: Spray two double coats of lacquer surfacer, letting the first coat air dry 15 minutes. The second coat may be sprayed immediately after the first coat by starting at the same place as first and spraying around the body in the same direction. Then let it air dry from three to five hours.

NO. 3 — RUBBING OR SANDING SURFACE: Use No. 240 or No. 280 Wet-or-Dry Trimite paper with plenty of water. This

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L ong durability.
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operation can be done with straight motions or circular motions, the circular motions being preferred as they leave no "direction-of-sanding" scratches. All sanding dust and sludge must be thoroughly washed off with water and the surface wiped dry before proceeding with next operation.

No. 4—SPOT PUTTY: If necessary, spot putty small holes, file marks and depressions, using a pyroxylin putty. Then let the surface air dry one to two hours, depending upon the thickness of putty applied. All putty spots must be dry sanded smooth and flush with the surrounding surface, after which the surface is to be thoroughly cleaned free of dust. This operation may be done between the application of the first and second coats of surfacer if desired.

No. 5—COLOR SURFACE: Spray on one or more coats of lacquer enamel. Additional coats can be sprayed in direct succession, starting the second in the same place as the first and going around, etc., the final coat to air dry 12 hours before cutting down for polishing.

No. 6 — SANDING OR CUTTING DOWN: Use No. 320 Wet-or-Dry Trimite waterproof paper with plenty of water. This wet sanding can be done with a 50/50 mixture of high-test gasoline and motor oil. Sand in a circular motion, after which wash the bodies with water. If oil is used, wash with high-test gasoline and dry thoroughly.

No. 7—SOLVENT COAT: Spray a wet even coat of lacquer thinner over the entire surface, taking care to avoid flooding it and causing runs and sags. The purpose of this operation is to level out the

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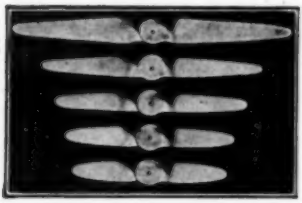

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surface and eliminate any possible scratch marks. An over-night drying should be allowed before rubbing and polishing.

No. 8—RUBBING AND POLISHING: Apply rubbing compound evenly and in one direction so that no abrupt cut off or cross scratches will show. Do not use too much compound. This operation is to be done with cheesecloth, which brings the lacquer coat to a smooth surface, after which apply polish to bring the finish to a high luster.

If striping, lettering or transfers are to be applied, they should be put on after the solvent coat has been sprayed on—if rubbing and polishing are not included in the schedule; otherwise they should be put on after the rubbing-down operation. As a protective coat for the striping or other decorative effects, apply one or more coats of clear, weatherproof, gloss lacquer. This will eliminate the polishing operation.

All lacquer products for this class of work should be of high grade quality for exterior service. This general procedure applies to new work and to those refinish jobs where all of the old finish has been entirely removed to the bare metal.—J. E. GREENE.

Binks Mfg. Co. of Canada

Neil C. Hurley, President, and J. F. Roche, Vice President and operating head of the Binks Mfg. Co. at 3106 Carroll Ave., Chicago, announce the formation of a new Canadian company, to be known as the Binks Mfg. Co. of Canada, Ltd. The new Binks of Canada will be located at Windsor, Ontario, and will greatly facilitate the rapidly increasing sale and service of Binks Spray Paint-Finishing Systems and Binks Water-Cooling Systems in Canada. Mr. Hurley and Mr. Roche are also the principal officers of the Canadian Corporation.

Letters from I. F. Readers

(Continued from page 6)

brittle and, of course, it must have good adhesion to the wire.

If you know a concern that furnishes colored enamel to wire hanger manufacturers, we would be pleased to know their name so that we can get in contact with them. We are sending you sample pieces of our enameled wire which will serve as a color guide. V. M. & P. naphtha solvent was used and it softens the baked enamel easily. This one feature must be avoided.—X. Y. A. Co.

Bone White Finish

In your November, 1934, issue of INDUSTRIAL FINISHING, a Mr. F. W. Worth has an article on page 30 about "Bone White Finish." I am interested in this material and would like to get full information on same. Who makes this material, and what does it cost in gallon lots?—F. W. B.

Plan for Finishing Room

Can you refer us to a few good articles or a book or an authority on the building of a lacquer and finishing room in a novelty manufacturing plant—a place where the work can be done in a speedy and efficient manner with the air conditioning and other provisions to turn out good work and be comfortable and healthy for the workmen?—D. E. C. (Advertising Specialties of Wood and Metal).

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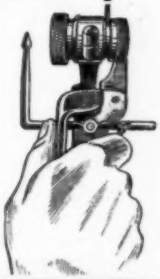

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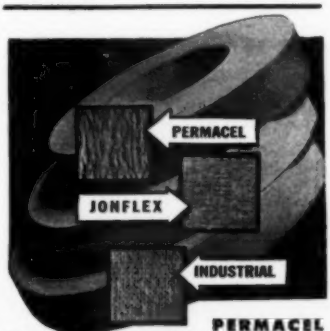

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Finishers, "Be Thorough"

OWING to the fact that my successful career as a finisher of woods is chiefly due to the thoroughness on the part of the foreman under whom I spent the days of my apprenticeship, I feel the urge to offer a few words of advice to the beginning finisher of today.

The foreman who presided over the department in which I received my initial instructions more than 40 years ago was a master craftsman. Fortune favored me in placing me under the ever watchful eye of this man.

For the past 30 years I have been employed as foreman finisher, and during these years it has been my pleasure to instruct many beginning finishers. I have earnestly endeavored to instill into the mind of each of these novices, the fact that thoroughness from start to finish will ever be the chief contributing factor toward his success as a wood finisher. This is especially true relative to the preparation of the base or ground work.

As a beginner I had the idea that if one were to be just a little careless in preparing the ground or base for a finishing job, the defects would or could be easily covered or concealed as each following coat was applied. That I was very much mistaken I soon learned. So to you beginning finishers I would say: do not slight your ground work. It matters not whether your sanding is done by machine or by hand; use plenty of fine sandpaper. See to it that your sanding is done smoothly and evenly. Always rub with the grain of the wood, never across it. After sanding, remove

all particles of dust, preferably with a brush. The wood is now prepared for filling and staining.

Perhaps it would be well for me to say a word here relative to wood filling, which must be done with thoroughness. You will sometimes find both open and close grain characteristics on the same piece of wood. Fill the open-grained parts with a paste filler but use a liquid filler on the close-grained parts. A varnish containing the same pigment material as that in paste-filler makes a splendid close-grained filler, but it should be thinned down.

I will say once more in closing that the beginning finisher will find thoroughness in the preparation of his base or ground work to be the greatest of all contributing factors towards perfection in the completed job. The old adage, "A poor beginning, ends well," certainly does not apply to wood finishing.—JOHN A. TWAMLEY.

The first streamlined locomotive to run on American rails, The Commodore Vanderbilt of the New York Central R. R., is finished in gunmetal lacquer with white stripings. Due to the streamlined feature, it is expected to make much greater speed than conventional-design locomotives, and is the probable forerunner of other locomotives of this type for the N.Y.C. Lines.

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Firefax is an 8-page illustrated booklet which reveals new and interesting facts about recent destructive fires, fire losses, fire protection and modern fire extinguishers. It is published by Pyrene Mfg. Co., Newark, New Jersey.

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EDITORIAL

Product Development

"We are committed to a program of continuous product development," is a wise New Year's resolution for every manufacturer. The times demand it; people are forever being attracted to what is new, different and improved—and in doing this they forsake what is old or out of date. Successful product development requires many minds and much cooperation. Valuable cooperation can be obtained from concerns who furnish or can furnish materials that enter into the manufacture of the product being developed.

Finishing materials contribute a great deal to the successful development of many products of which finishes form an important part. For example, in replying to a recently published inquiry in INDUSTRIAL FINISHING about fish skin flowers, one finish manufacturer reminded us that his firm had "practically fathered this industry which has grown to a fairly good size . . . " Other finish manufacturers have contributed their experience and technical information to the development of economical methods for finishing many kinds of household furnishings and utilities. Their storehouses of knowledge and laboratories are always at your disposal. Make use of them often.

Finishing Costs

One of INDUSTRIAL FINISHING's readers has asked for "a price list on finishing furniture . . . both new and refinished." We were obliged to tell him that the proper price to charge for finishing or refinishing furniture can only be arrived at by figuring it out according to the costs that enter into the job at each individual shop or factory. The cost, of course, will depend upon 1) the kind and size of furniture to be finished, 2) the quality of finish demanded, 3) what make and kind of finishing materials are used, 4) what rates are paid for labor, and 5) what overhead must be figured in.

Obviously it would be a poor business for one shop to use another shop's prices. It is commendable to strive to reduce costs so as to be able to meet a competi-

tor's prices and still have a profit; but without an item-by-item analysis of one's own true costs, it's dangerous guess work to quote prices on such an uncertainty as a set of finishing operations—especially when they apply to custom work to be done in a shop that lacks modern facilities. One can easily consume twice the amount of labor, and use a much greater quantity of materials and supplies than the quoted price would safely permit.

Cost information is very valuable, but the place to look for it is in one's own shop or department. Compile your own costs and make them as accurate as possible, as based on actual performance. Steady work on large runs will naturally tend to lower the finishing cost per unit, while intermittent work on occasional jobs and special jobs tends to increase the unit cost of finishing. While it is true that prices for custom finishing and refinishing must be made low enough to attract business, at the same time if they are persistently below or at cost, the man who pays the bills will soon discover that financial losses are slowly sinking the ship.

Agitating Finishing Materials

Practical finishers know that in many cases the liquid in a container from which material is being drawn for spraying, or into which articles are being dipped, needs to be continually stirred for best results. Otherwise, too much solid material settles to the bottom and, as operations proceed, slight changes occur in the viscosity and general proportions of the ingredients in the finishing liquid. Mechanical stirrers and agitators of various kinds have been devised for mixing and stirring finishing materials. These can be used continuously or intermittently, as the occasion seems to require.

A common type of stirrer that is applicable to a wide variety of service consists of a long shaft (2 to 4-ft. long) that has a small driving motor and clamp at one end, and one or more small propellers or beater blades at the other end. Hand stirrers and air-propelled agitators are also available for special conditions. Intelligent use of the proper type of stirrer will result in less wastage of material and will serve to preserve the original uniformity of the finishing liquid being used.

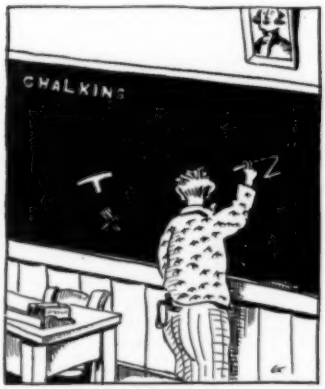
Water Spray Booths

Many users of industrial spray equipment are exhibiting more interest in what are commonly called "water spray booths," wherein the spent spray or exhaust material is drawn through water sprays, jets or mists. The chief purposes of these water spray booths are to reduce to a minimum the fire and explosion hazard incident to spraying lacquer and other inflammable materials, and to stop the discharge of objectionable pigment and dust through the exhaust pipes and into the outer air adjacent to the plant. An ordinary spray booth exhaust is often very objectionable in the neighborhood because of the pigment-laden paint spray that is released to contaminate the surrounding air.

In the modern water booth the fine particles of solid residues are caught and can be salvaged if so desired. This residue does not collect on the insides of exhaust piping or on fan blades, therefore the fire hazard incident to cleaning accumulations of finishing materials from such places is entirely removed. Also, if a fire actually starts in the booth, the flames will be drawn into the water spray exhaust where they will be extinguished instead of spreading. Several spray booth manufacturers are prepared to supply and install water spray booths of any size and style to suit any product or set of conditions that may prevail.

Review of Equipment Next Month

Such a large amount of material became available for the Major Review article about the "Developments During 1934," appearing in this issue, that the section devoted to New and Improved Equipment will be carried over to February issue. The developments in equipment next month will include descriptions and illustrations of new and improved products which are used in preparing surfaces for finishing materials, applying finish coatings; and for drying, rubbing, polishing and decorating finish coatings.



Metal Casket Finishes

THE METAL casket industry is one of the largest users of nitrocellulose lacquers. Several different systems of finishing are being used, for example, silver finish, gold finish, copper finish, antique bronze, statuary bronze and pearl essence or metallic effect. Probably the most commonly used system right now is the "silver casket finish," which is produced as follows:

After the metal is thoroughly cleaned a single coat of light gray pyroxylin primer is applied and allowed to dry long enough to permit free sanding without "rolling" or clogging the sand-paper. This is followed by a coat of silver bronze lacquer—a mixture of bronze powder and a special bronze mixing liquid. Next comes one or more coats of clear, casket-finishing lacquer. The last coat should be allowed to dry overnight to prepare the surface for the rubbing and polishing operations. The above system is duplicated to produce the gold and copper bronze finishes.

A special black bronzing liquid and pearl lacquer are used with the copper bronze powder to obtain the dark bronze finishes. The correct proportions to use depend

upon the shade required by the customer.

Pearl essence finish is produced by applying a silver gray ground coat over the primer, after which a coat of a mixture of pearl lacquer and pearl essence is applied. This is allowed to dry five or six hours before applying the first coat of finishing lacquer. Allow overnight drying for the last coat before polishing. If proper materials are used with the above procedure, very satisfactory effects will be obtained.—J. E. GREENE.

V. J. Dolan Visits Southern States; Appoints Representative

Mr. V. J. Dolan recently returned from an extensive motor trip through the southern states where he visited representatives and called on a number of furniture factories. Mr. Dolan announces the appointment of Mr. H. B. Wellons to represent his company in Georgia, Tennessee and South Carolina.

Flexible Lacquer Book

"How Good are You at Twisting and Bending," is the question 3,500 lacquer users in the country are being asked in a new booklet just off the press, issued by the Roxalin Flexible Lacquer Co., Inc., 800 Magnolia Ave., Elizabeth, N. J. Metal strips with a one-coat finish are enclosed so that you can test your skill. Several lacquer products and a new aluminum maintenance paint are tersely described. All of them, it is asserted, have definitely licked finish failure.

Commercial Solvents Corp. Absorbs Two Other Concerns

A paragraph from a recent letter by the Commercial Solvents Corporation, Terre Haute, Ind., states that: "One development in our company in which we believe readers of INDUSTRIAL FINISHING will be interested is that about a year ago we acquired as subsidiary companies the Rossville Commercial Alcohol Corporation and the American Solvents and Chemical Corporation of California. On October 1, 1934, both of these companies were absorbed by Commercial Solvents Corporation, therefore we are now in a position to furnish a complete line of pure, specially denatured and completely denatured alcohols, in addition to our lacquer solvents and plasticizers."

Arco Research Laboratories

Under date of November 25, 1934, the Arco Company at Cleveland, Ohio, announced the foundation of Arco Research Laboratories, a division separate and apart from the routine and problems of daily paint production . . . dedicated to American Industry for exclusive paint, varnish and lacquer research . . . with the objective of making possible the profitable production of better finishes at lower costs.

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